

Demonstrating the Climate, Financial, and Diversion Benefits of Zero Waste

A New Calculator for California Businesses

June 2010

Amity Lumper

Cascadia Consulting Group, Inc.



There are dozens of calculators out there – why another?

Climate Change Home

What You Can Do Home

Waste Home

Basic Information

Publications

Tools

Stakeholder Success Stories

U.S. ENVIRONMENTAL PROTECTION AGENCY

share

Climate Change - Waste

Search: ☐ All EPA ☒ This Area

Contact Us You are here: [EPA Home](#) » [Climate Change](#) » [What You Can Do](#) » [Waste](#) » [Tools](#) » [WARM](#) » WARM Online

Waste Reduction Model (WARM)

NEW VERSION: Updated November 2009

(Version 10, 11/09)

EPA created WARM to help solid waste planners and organizations track and voluntarily report greenhouse gas emissions reductions and energy savings from several different waste management practices. WARM Online was last updated November 2009.

Use this worksheet to describe the baseline and alternative MSW management scenarios that you wish to compare. The information in the input boxes in the tables, along with the information in the output boxes, will be used to calculate the greenhouse gas emissions reductions and energy savings from several different waste management practices. For information on the definition of each of the WARM materials and waste transport characteristics, please see the [WARM materials definitions list](#).

Tips:

- If the material is not generated in your community/organization or you do not want to enter 0.
- Make sure that the total quantity generated equals the total quantity managed.
- If you have any questions, consult the [WARM User's Guide](#).

Steps 1 and 2. Baseline and Alternative Scenarios

	Baseline Scenario				Tons Generated	Alternative Scenario	
	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted		Tons Source Reduced	Tons Recycled
Material				N/A	0		
Aluminum Cans				N/A	0		
Steel Cans				N/A	0		
Copper Wire				N/A	0		
Glass				N/A	0		
HDPE				N/A	0		
LDPE				N/A	0		
PET				N/A	0		
Corrugated				N/A	0		

This sheet provides a calculator based on sample weights for some typical materials and an office paper weight calculator. The unit weight values may be used to determine the weight of materials purchased or manufactured and to approximate only, and the user is encouraged to utilize actual material weight values should be considered an estimate. The user can select the drop-down menu below to choose a material type and example material from the Material selection. The weight estimates created in this sheet can be input or shared given to get an approximate weight sheet.

Select a material:

Material Unit Converter		
Number of units (cans, feet, cubic yards, etc.)	Weight per Unit Selected	Total Weight (pounds)
<input type="text" value="1"/>	<input type="text" value="0.0012"/>	<input type="text" value="0.0012"/>

Printer-Office Paper Weight Calculator

The calculator will determine the approximate weight of one ream (500 sheets) of office paper based on specifications entered by the user. You must enter the dimensions and grade of paper (a). Cells shaded in green are input cells. Note that standard office paper is considered to be 8.5" x 11", 20 lb grade.

Paper Dimensions (inches)

Width (b)	<input type="text" value="11"/>
Paper Grade (lb)	<input type="text" value="20"/>
Weight of One Ream (lbs)	<input type="text" value="5.40"/>
Reams Purchased	<input type="text" value="1"/>
Total Weight of Paper (lbs)	<input type="text" value="5.40"/>

Material Unit Weight Table

Material Type	Example Material	Weight (lb/in²)	Unit Explanation Notes
Aluminum	Aluminum can	0.0012	Weight of one can provided
Steel	1/4" steel drum	8.8	Weight of one drum provided
	20-gauge steel drum	13.30	Weight of one drum provided
	Steel Ream	13.30	Weight of one ream provided

User's Guide Input Sheet Unit Converter Unit Output Sheet Energy Output Sheet

[illegible]



NERC | Northeast Recycling Council

-0.4340E+047
 -0.4340E+047
 -0.4340E+047
 -0.4340E+047
 -0.4340E+047
 -0.4340E+047

Estimating the Environmental Benefits of Source Reduction, Reuse and Recycling

Updated by Northeast Recycling Council, Inc. (NERC) and Abt Associates, Inc.
© April 2009

Ten states united for environmentally sustainable waste management

Worksheet 2. Environmental Impacts of Recycling in

The following tables summarize the estimated environmental benefits of source reduction, reuse and recycling and provide comparison figures to put the estimates in context.

Table 1. Materials Management Overview

Year Cans	Tons Recycled	Tons Source Reduced/Reused	Tons Landfilled	Tons Incinerated/ Waste-To-Energy	Total Tons Disposed
	0	0	0	0	0
	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00

Date of Calculator Analysis: January 0, 1900

NOTE: If you have trouble with label formatting, see instructions

California's Commercial Climate Calculator

Motivation & Goals

- AB32 requires commercial and multi-family sector recycling
- CalRecycle provides an easy-to-use calculator to show benefits of waste reduction and diversion:



Dollars saved

Tons of resources returned
to the economy



Greenhouse gas emissions reduced



Developing the Calculator

Process & Considerations

- Existing calculator research
- Stakeholder engagement
 - 20 initial phone interviews
 - 12 first-round beta tests
 - 9 second-round beta tests
 - 30 additional feedback reports
- Inter-agency collaboration
 - ARB and UC Berkeley: COOLCalifornia



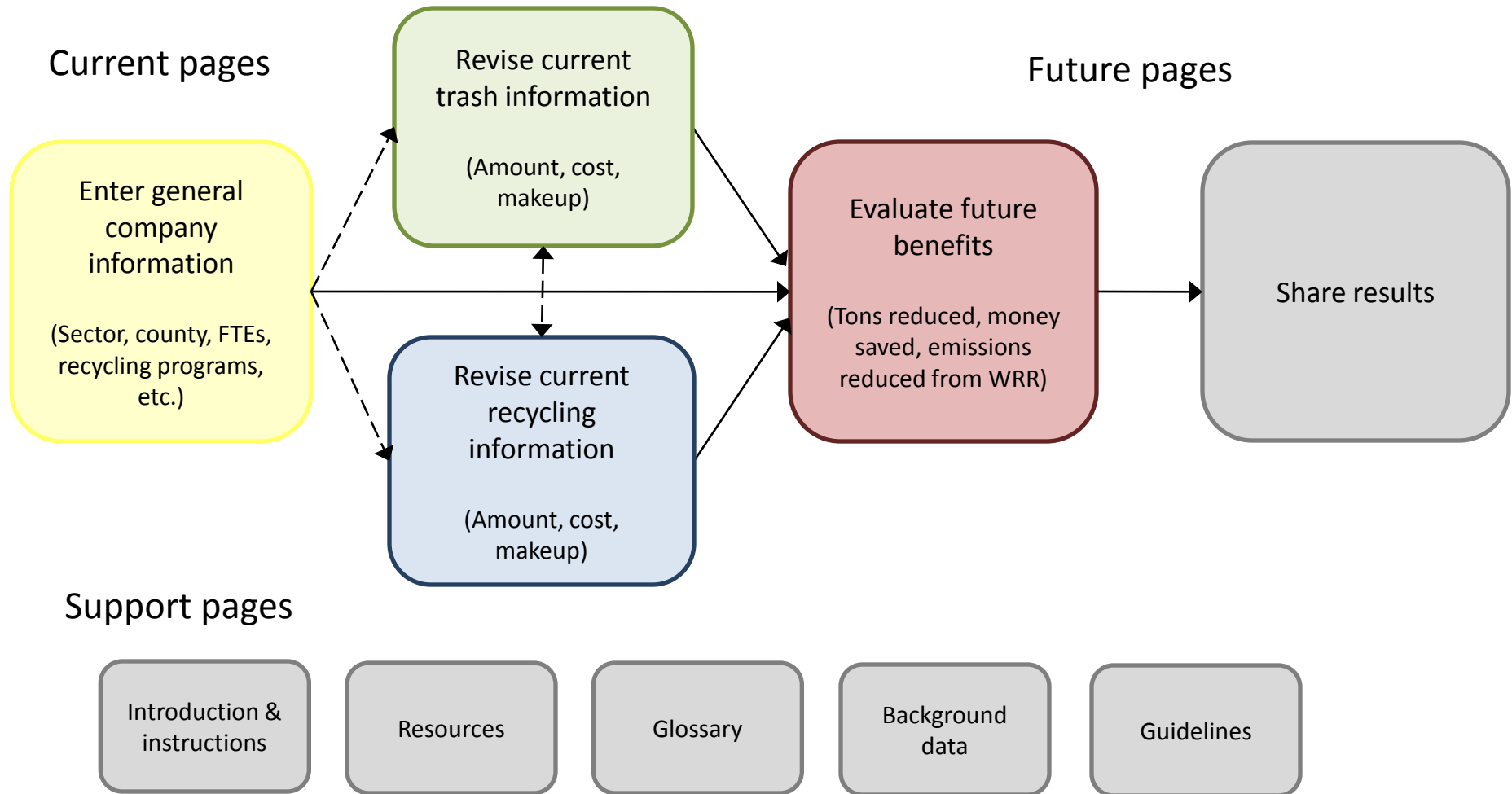
Calculator Basics

Features & Data

- Unique features
 - Flexibility
 - Users
 - Data inputs
 - Transparency
 - One-stop calculator
 - Tons, cost, GHG
 - Resources, case studies
 - CA and regionally specific
- Default data sources
 - CA waste studies
 - Sector-specific
 - Quantity and composition
 - Statewide cost study
 - WARM+CARB research

Calculator Overview

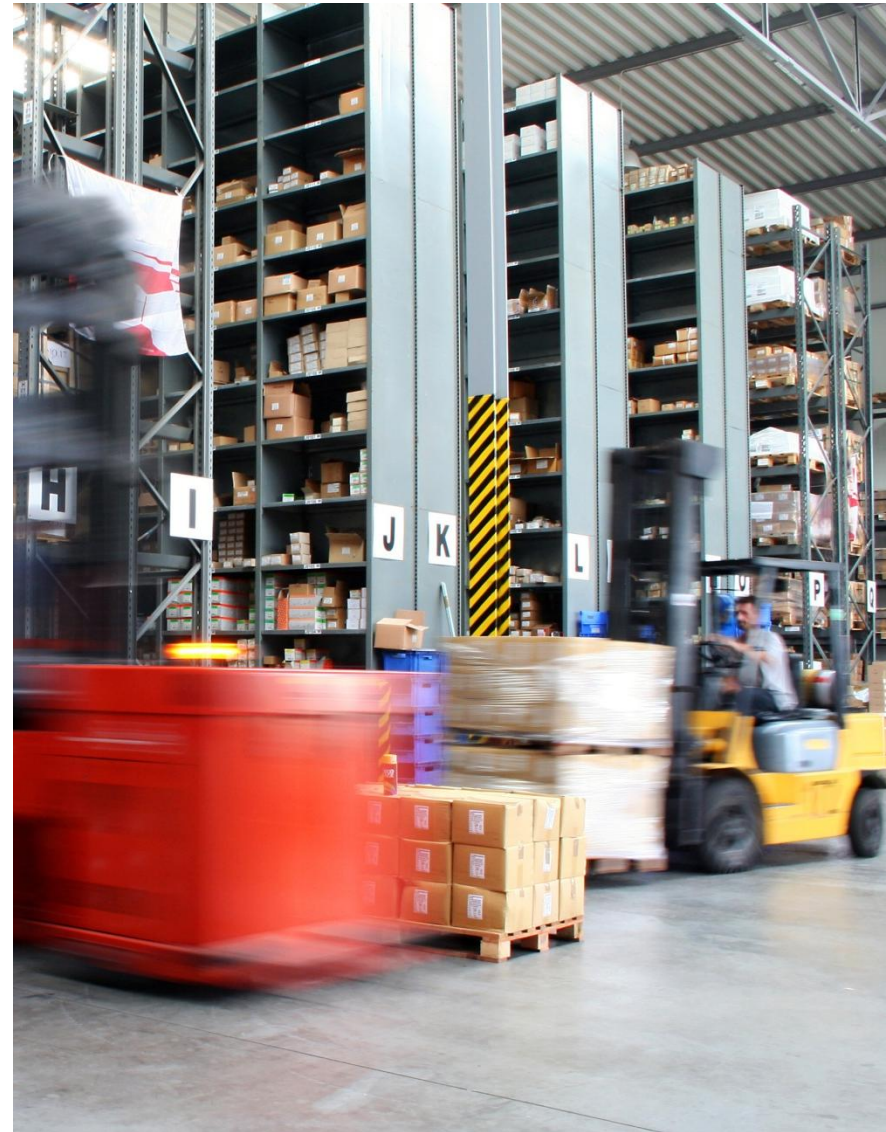
User Steps



Case Studies

Real-world Examples

- Sector: Distribution Center
- Location: Irvine (Orange County)
- Employees: 64 FTEs
- Recycling Program: Cardboard only
- Access to information: None
- Results (annual):
 - Trash: 141 tons and \$22,000
 - Recycling: 10 tons and \$429
 - Benefits:
 - \$700 avoided disposal
 - 33MT CO₂e
 - 6% recycling rate



Case Studies

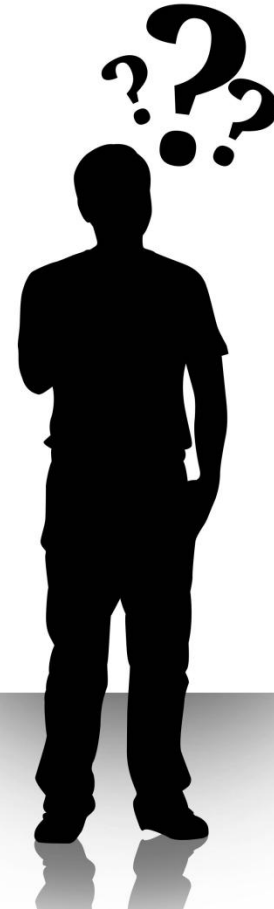
Real-world Examples



- Sector: Multi-family
- Location: Walnut Creek (Contra Costa County)
- Units: 12 MF Units
- Recycling Program: None
- Access to information:
 - Has trash information only
 - 1, 2 cubic yard container, 100% full, 2 pickups/week
- Results (annual):
 - Trash: 18 tons and \$7,000

Lessons Learned

- Upfront research pays off
- Calculator meets needs of a wide range of users
- Future opportunities exist for integrating new source data
- Collaboration with other agencies is essential



Thanks!

Amity Lumper

(206) 449-1111

amity@cascadiaconsulting.com

